

**Claims**

1. A method for calculating an estimate of the position of a mobile station, comprising:
  - collecting in a mobile station, position estimate information (PEI) transmitted by a location node;
  - generating in the mobile station, PEI parameters based upon the PEI, wherein the PEI parameters include information from which the location node can be uniquely located or identified; and
  - sending the PEI parameters from the mobile station to a position determination entity, wherein the PEI parameters permit calculation of the position estimate.
2. The method according to claim 1, further comprising:
  - receiving in the mobile station, a location request message from the position determination entity; and
  - initiating the generating of the position estimate information (PEI) parameters responsive to the location request message.
3. The method according to claim 1, further comprising:
  - initiating the generating of the position estimate information (PEI) parameters responsive to a location request generated by the mobile station.
4. The method according to claim 1, wherein the position estimate information (PEI) parameters include latitude and longitude of the location node.
5. The method according to claim 1, wherein the position estimate information (PEI) parameters include the time which the mobile station receives the PEI.
6. The method according to claim 1, wherein the position estimate information (PEI) parameters indicate whether or not the mobile station is currently in view of the location node.
7. The method according to claim 1, wherein if the mobile station is not currently in view of the location node, the position estimate information (PEI)

parameters include information relating to elapsed time which the mobile station has been out of view of the location node.

8. The method according to claim 1, wherein if the mobile station is not currently in view of the location node, the position estimate information (PEI) parameters include velocity estimation of the mobile station.

9. The method according to claim 1, wherein if the mobile station is currently in view of the location node, the position estimate information (PEI) parameters include information relating to proximity of the mobile station relative to the location node.

10. The method according to claim 9, wherein the information relating to the proximity of the mobile station relative to the location node comprises signal strength of the location node.

11. The method according to claim 9, wherein the information relating to the proximity of the mobile station relative to the location node comprises a signal-to-interference ratio of the location node.

12. The method according to claim 9, wherein the information relating to the proximity of the mobile station relative to the location node comprises a round-trip-delay (RTD) measurement.

13. The method according to claim 1, wherein the position estimate information (PEI) parameters include a direction of motion of the mobile station.

14. The method according to claim 1, wherein the position estimate information (PEI) parameters include the channel identification at which the mobile station and the location node communicate.

15. The method according to claim 1, wherein the position estimate information (PEI) parameters include information which identifies a device type of the mobile station.

16. The method according to claim 1, wherein the position estimate information (PEI) parameters include information which identifies a transmitter type of the location node.

17. The method according to claim 1, wherein the position determination entity comprises a position determination entity (PDE) operating in a code division multiple access (CDMA) network.

18. The method according to claim 1, wherein the position determination entity comprises a service mobile location center (SMLC) operating in a global system for mobile communications (GSM) network.

19. The method according to claim 1, wherein the location node comprises a base station.

20. The method according to claim 1, wherein the location node comprises a wireless access point.

21. The method according to claim 1, wherein the location node comprises a GPS satellite.

22. The method according to claim 1, the method further comprising:  
collecting in the mobile station, position estimate information (PEI) transmitted by a plurality of location nodes; and

generating in the mobile station, the PEI parameters based upon the PEI collected from the plurality of location nodes, wherein the PEI parameters include information which identifies a location of at least one of the plurality of location nodes.

23. The method according to claim 22, wherein each of the plurality of location nodes comprise a different type of transmission entity.

24. The method according to claim 1, wherein the position estimate information (PEI) comprises a system parameters message (SPM).

25. The method according to claim 1, wherein the position estimate information (PEI) comprises a standard code division multiple access (CDMA) system parameters message (SPM).

26. The method according to claim 1, wherein the position estimate information (PEI) is a broadcast message from the location node.

27. A method for calculating a position estimate of a mobile station which has generated position estimate information (PEI) parameters based upon PEI transmitted by a location node, the method comprising:

receiving in a position determination entity, the PEI parameters which have been sent by the mobile station, the PEI parameters including information from which the location node can be located or identified; and

calculating the position estimate of the mobile station based upon the PEI parameters.

28. The method according to claim 27, further comprising:  
sending a location request message to the mobile station, causing the mobile station to send the position estimate information (PEI) parameters.

29. The method according to claim 27, further comprising:  
sending the position estimate to the mobile station.

30. The method according to claim 27, wherein the position estimate information (PEI) parameters include latitude and longitude of the location node.

31. The method according to claim 27, wherein the position estimate information (PEI) parameters indicate whether or not the mobile station is currently in view of the location node.

32. The method according to claim 27, wherein the position estimate

information (PEI) parameters include a pseudo-random noise (PN) code index of the location node.

33. The method according to claim 27, wherein if the mobile station is not currently in view of the location node, the position estimate information (PEI) parameters include information relating to elapsed time which the mobile station has been out of view of the location node.

34. The method according to claim 27, wherein if the mobile station is not currently in view of the location node, the position estimate information (PEI) parameters include velocity estimation of the mobile station.

35. The method according to claim 27, wherein if the mobile station is currently in view of the location node, the position estimate information (PEI) parameters include information relating to proximity of the mobile station relative to the location node.

36. The method according to claim 35, wherein the information relating to the proximity of the mobile station relative to the location node comprises signal strength of the location node.

37. The method according to claim 35, wherein the information relating to the proximity of the mobile station relative to the location node comprises a signal-to-interference ratio of the location node.

38. The method according to claim 35, wherein the information relating to the proximity of the mobile station relative to the location node comprises a round-trip-delay (RTD) measurement.

39. The method according to claim 27, wherein the position determination entity comprises a position determination entity (PDE) operating in a code division multiple access (CDMA) network.

40. The method according to claim 27, wherein the position determination entity comprises a service mobile location center (SMLC) operating in a global system for mobile communications (GSM) network.

41. The method according to claim 27, wherein the position estimate information (PEI) parameters include information which identifies a location of at least one of a plurality of location nodes with which the mobile station is in communication.

42. A system for calculating a position estimate of a mobile station, the system comprising:

a location node configured for transmitting position estimate information (PEI) to the mobile station;

a position determination entity for receiving PEI parameters sent by the mobile station, the mobile station having generated the PEI parameters based upon the PEI, and wherein the PEI parameters include information from which the location node can be located or identified; and

a processor associated with the position determination entity, the processor calculating the position estimate of the mobile station based upon the PEI parameters.

43. The system according to claim 42, wherein the position determination entity sends a location request message to the mobile station, causing the mobile station to generate the position estimate information (PEI) parameters.

44. The system according to claim 42, wherein the position estimate information (PEI) parameters include latitude and longitude of the location node.

45. The system according to claim 42, wherein the position estimate information (PEI) parameters indicate whether or not the mobile station is currently in view of the location node.

46. The system according to claim 42, wherein if the mobile station is not currently in view of the location node, the position estimate information (PEI) parameters include information relating to elapsed time which the mobile station has been out of view of the location node.

47. The system according to claim 42, wherein if the mobile station is not currently in view of the location node, the position estimate information (PEI) parameters include velocity estimation of the mobile station.

48. The system according to claim 42, wherein if the mobile station is currently in view of the location node, the position estimate information (PEI) parameters include information relating to proximity of the mobile station relative to the location node.

49. The system according to claim 48, wherein the information relating to the proximity of the mobile station relative to the location node comprises signal strength of the location node.

50. The system according to claim 48, wherein the information relating to the proximity of the mobile station relative to the location node comprises a signal-to-interference ratio of the location node.

51. The system according to claim 48, wherein the information relating to the proximity of the mobile station relative to the location node comprises a round-trip-delay (RTD) measurement.

52. The system according to claim 42, wherein the position determination entity comprises a position determination entity (PDE) operating in a code division multiple access (CDMA) network.

53. The system according to claim 42, wherein the position determination entity comprises a service mobile location center (SMLC) operating in a global system for mobile communications (GSM) network.

54. The system according to claim 42, further comprising:  
a plurality of location nodes, each transmitting position estimate information (PEI) to the mobile station; and  
wherein the mobile station generates the PEI parameters based upon the PEI collected from each of the plurality of location nodes, and wherein the PEI parameters include information which identifies a location of at least one of the plurality of location nodes.
55. The system according to claim 42, wherein each of the plurality of location nodes comprise a different type of transmission entity.
56. The system according to claim 42, wherein the position estimate information (PEI) comprises a system parameters message (SPM).
57. The system according to claim 42, wherein the position estimate information (PEI) comprises a standard code division multiple access (CDMA) system parameters message (SPM).
58. The system according to claim 42, wherein the position estimate information (PEI) is a broadcast message from the location node.
59. The system according to claim 42, wherein the location node comprises a base station.
60. The system according to claim 42, wherein the location node comprises a wireless access point.
61. The system according to claim 42, wherein the location node comprises a GPS satellite.



62. A computer readable medium containing instructions for controlling a computer which calculates a position estimate of a mobile station according to a method comprising:

collecting in the mobile station position estimate information (PEI) transmitted by a location node;

generating in the mobile station PEI parameters based upon the PEI, wherein the PEI parameters include information from which the location node can be located or identified; and

sending the PEI parameters from the mobile station to a position determination entity, wherein the PEI parameters permit calculation of the position estimate of the mobile station.

63. A computer readable medium containing instructions for controlling a computer for calculating a position estimate of a mobile station, the mobile station having generated position estimate information (PEI) parameters based upon PEI transmitted by a location node, the computer calculating the position estimate according to a method comprising:

receiving in a position determination entity the PEI parameters which have been sent by the mobile station, the PEI parameters including information from which the location node can be located or identified; and

calculating the position estimate of the mobile station based upon the PEI parameters.

64. A system for calculating a position estimate of a mobile station, the system comprising:

transmitting means for transmitting position estimate information (PEI) to the mobile station;

locating means for receiving PEI parameters sent by the mobile station, the mobile station having generated the PEI parameters based upon the PEI, and wherein the PEI parameters include information from which the location node can be located or identified; and

processing means associated with the locating means, the processing means calculating the position estimate of the mobile station based upon the PEI parameters.